عنوان مقاله:

Effect of Magnetic Field on heat transfer in a Microchannel Heat Sink with ellipticals offset

محل انتشار:

سی و یکمین همایش سالانه بین المللی مهندسی مکانیک ایران و نهمین همایش صنعت نیروگاهی ایران (سال: 1402)

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خلاصه مقاله:

In this study, hydrodynamic behavior of nanofluid (Fe۳O۴-water) in a microchannel heat sink (MCHS) with offset fanshaped re-entrant cavities in the channel side wall undermagnetic field is investigated numerically. The two phasemixture model is used to simulate nanofluid flow. Flow isassumed laminar, steady and incompressible. The effectsof changing Reynolds number, power magnetic field, andnanoparticle diameter on fluid behavior are considered.The results show that the friction factor decreases andNusselt number increases with increasing Reynoldsnumber. With increasing magnetic field intensity, theNusselt number increase. The particle diameter scale upwith application of a non-uniform magnetic field, theaverage bottom heat sink temperature decreases and theNusselt number increases. The results indicate that a nonuniformmagnetic field significantly affects nanofluidbehavior compared to a uniform magnetic field.

کلمات کلیدی:

Nanofluid; Micro channel heat sink;Magnetic field; Nusselt number